NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, SEASONAL

(Acre)

CODE 344

DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following:

- Reduce sheet and rill erosion.
- Reduce soil erosion from wind.
- Manage snow to increase plant available moisture.
- Provide food and escape cover for wildlife.
- Sequester carbon and improve soil quality.
- Sprout waste grain for weed control and decrease tillage inputs.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This standard includes residue management methods practiced during the part of the year from harvest until residue is buried by tillage for seedbed preparation.

CRITERIA

General Criteria Applicable to All Purposes

Loose residue to be retained on the field shall be uniformly distributed on the soil surface. Where combines or similar machines are used for harvesting, they shall be equipped with spreaders capable of redistributing residues over at least 80 percent of the working width of the header.

Residues shall not be burned under dry land or rain-fed production systems. Under-irrigated production systems, infrequent burning to treat a specific problem such as disease, may be practiced where control is best available technology. An evaluation of the burn impacts on soil, water, air, plant and animal resources will indicate no net negative effects.

Any tillage that occurs during the management period shall be limited to methods that leave residue on the surface and maintain the planned cover conditions.

Additional Criteria to Reduce Sheet and Rill Erosion and Erosion from Wind

The amount of residue needed to reduce erosion within the soil loss tolerance (T) or any other planned soil loss objective shall be determined using current approved wind and water erosion prediction technology. Partial removal of residue by means such as baling, grazing, or other harvest methods shall be limited to retain the amount needed to meet erosion objective. The remaining residue shall be maintained on the surface through periods when sheet and rill erosion has the potential to occur or until planting, whichever occurs first. Calculations shall account for the effects of other practices in the conservation management system.

Additional Criteria to Manage Snow to Increase Plant Available Moisture

Stubble shall be left standing as high as possible by the harvesting operation, but not less than 6 inches in any case.

Stubble shall be maintained in a standing orientation over winter to trap and retain snow. Any tillage that occurs during this period shall be limited to undercutting tools such as blades, sweeps, or implements that lift to counter

compaction. Where carbon sequestration and soil quality are objectives, limit depth of tillage to 3 inches or less.

Loose residue may be removed providing that the remaining residue is left standing.

Additional Criteria to Provide Food and Escape Cover for Wildlife

The amount of residue, height of the stubble, and length of the management period necessary for meeting habitat requirements for the target species or wildlife population shall be determined using an approved habitat evaluation procedure.

Residues shall not be removed, irrigated, or tilled, unless it is determined by the habitat evaluation procedure that such manipulation will not adversely affect habitat values.

Tillage shall be delayed until the end of the management period to maintain the food and cover value of the residue.

Additional Criteria to Sequester Carbon and Improve Soil Quality

The residue amount and management period necessary for meeting carbon sequestration and improved soil quality objectives shall be determined using an approved carbon sequestration or soil quality evaluation procedure.

Residues shall not be removed unless it is determined by the evaluation procedures that removal will not adversely affect the carbon sequestration potential or improved soil quality.

Additional Criteria to Sprout Waste Grain for Weed Control and Decrease Tillage Inputs

Chop or shred and partially incorporate grain residues before the mid-day soil temperature drops below 60 degrees Fahrenheit in the fall. If irrigation water is available, irrigate only as needed to germinate seeds.

CONSIDERATIONS

Excess removal of plant residue by baling or grazing often produces negative impacts on resources. These activities should not be performed without full evaluation of impacts on soil, water, animal, plant, and air resources.

Production of adequate amounts of crop residue necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties, by the use of cover crops, and by adjustment of plant populations and row spacing.

When planting in a low-residue seedbed, exposure to erosion can be minimized, and moisture for germination can be conserved. Complete tillage and planting in a single operation or perform primary tillage no more than three days before planting.

The effectiveness of stubble to trap snow increases with stubble height. Variable height stubble patterns may be created to further increase snow storage.

The value of residue for wildlife habitat can be enhanced by leaving rows of unharvested crop standing at intervals across the field.

The carbon sequestration and soil quality values may be maximized by additional reductions in tillage and the reduction in removal of residues. The selection of high residue producing crops, specifically selected crop varieties, adjustments of planting populations and row spacing, and cover crops will maximize benefits.

Reductions in tillage depth will maximize the carbon retention and increase soil quality, reducing the exchange of gases between the soil and atmosphere. Reduced tillage depth will decrease aeration that enhances carbon consumption by microbes.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance (O&M) described in this standard.

Specifications shall be recorded using approved certification sheets, jobsheets, narrative statements in the conservation plan, or other acceptable methods. Deviations from an approved evaluation system for a specific need will be documented with sufficient background information.

OPERATION AND MAINTENANCE

No operation and maintenance requirements have been identified for this practice.